



# Putting Research to Work

RD&T E-Newsletter, March 2004

Technical information for state DOT highway professionals

Prepared by CTC & Associates LLC

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## Research World

### World Road Association – Global Transportation Resource

Founded in Paris in 1909, the World Road Association is a non-profit international organization with 104 member governments, including the United States, and a total of 230 members in 130 countries. The association was previously the Permanent International Association of Road Congresses, with its acronym (PIARC) still used. The organization's vision is to be "the world leader in providing information on roads and road transport policy and practices within an integrated sustainable transport context." Explore extensive research, publications, standards and technical committees at <http://www.piarc.org/site/en/index.htm>. For links to major European road administrations see <http://www.piarc.org/en/part10/index.htm>.

### International Information Sharing through NCHRP

The continuing NCHRP Project 20-36 supports international information sharing on highway research and technology.

- Scans planned for **2004** include: 1) Performance measurement for DOTs; 2) Human factors; 3) Prefabricated bridge elements; 4) Construction management practices, and 5) Quiet pavements.
- Scans planned for **2005** include: 1) Highway and traffic incident management; 2) Asset management; 3) Safety applications of ITS; 4) Underground highways, and 5) Mitigating congestion by managing demand. See the full description of NCHRP Project 20-36 at: <http://www4.trb.org/trb/crp.nsf/All+Projects/NCHRP+20-36>.

Full reports on completed scan tours are available on the Web site of FHWA's Office of International Programs at: <http://international.fhwa.dot.gov/links/pubs.cfm>.

### FINNRA and the Big Weather Picture

The Finnish Road Administration provides a comprehensive road information Web site for Finland's travelers featuring current views from weather cameras strategically located throughout the country. The site also provides real-time information on traffic speeds and construction, and describes Finland's extensive use of variable speed limit signs:

<http://www.tiehallinto.fi/alk/english/frames/kelikamerat-frame.html>.

### Tackling British Congestion with Satellite Data

The U.K. Department for Transport will use data collected from satellite navigation systems in more than 50,000 private and commercial vehicles to help identify patterns and locations of congestion on urban and interurban roads. In purchasing this data, and by providing it free of charge to local authorities, the UK Government is underlining its commitment to tackling congestion and improving the ease and reliability of travel between and around towns and cities. Courtesy of the TRB E-Newsletter: [http://www.dft.gov.uk/pns/DisplayPN.cgi?pn\\_id=2004\\_0014](http://www.dft.gov.uk/pns/DisplayPN.cgi?pn_id=2004_0014).

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Other e-newsletters for transportation professionals:

**TRB E-Newsletter** from the Transportation Research Board: <http://gulliver.trb.org/news/>.

**Transportation Communications Newsletter**: <http://groups.yahoo.com/group/transport-communications/>.

**CTS Research E-News** from the University of Minnesota: <http://www.cts.umn.edu/publications/enews/>.

# Designing for the Future

## **PennDOT's GIS Portal Wins Engineering Award**

Pennsylvania DOT and the consulting firm GeoDecisions were recently honored by the American Council of Engineering Companies of Pennsylvania for their development of PennDOT's GIS portal, which serves both PennDOT employees and the public. The portal includes a videolog of state highways, an interactive traffic volume map, and links to spatial data files. Read the press release at <http://www.directionsmag.com/press.releases/index.php?duty=Show&id=8700>, and visit PennDOT's Geographic Information Division at <http://www.dot.state.pa.us/pennidot/bureaus/PlanRes.nsf/HomePageGID>.

## **New GIS Resource: FHWA Web Site**

FHWA's new GIS in Transportation Web site highlights notable applications of GIS technology across the country, including urban transportation planning and environmental applications. The site also features local, state and national GIS practices and includes links to other GIS resources. Visit the site at <http://www.gis.fhwa.dot.gov>.

## **Environmental Impact Statement Completion Time on the Rise**

The average time to prepare an Environmental Impact Statement for a transportation project in the United States rose from 3.6 years during the 1970s, 1980s and early 1990s to 5.1 years between 1995 and 2001, according to an FHWA study. The study is part of the agency's effort to understand and address the ways that compliance with the National Environmental Policy Act can hinder project delivery. <http://environment.fhwa.dot.gov/stmrng/newsletters/feb04nl.htm>.

## **Handbook Offers Guidance on Environmental Justice**

Colorado DOT has developed an Environmental Justice Guidebook as part of a research study on transportation project planning. Researchers talked with community leaders across the state to develop the guide, which includes techniques for improving public outreach, background on regulatory requirements, and performance measures for assessing the effectiveness of environmental justice efforts. View the report and the guidebook (Appendix D) at <http://www.dot.state.co.us/publications/EnvironmentalJustice/EJ.htm>. Courtesy of the CDOT Research Newsletter.

## **Design Options for Short-Span Bridges**

When a short-span bridge needs to be replaced, steel is an ideal choice for its durability, ease of maintenance and ease of construction. Steel's lighter weight also means lighter foundations and lower erection costs. Read more about steel and other options for short-span bridge design in the latest issue of *Better Bridges* at <http://www.betterroads.com/articles/feb04d.htm>, which includes a link to an online course in computer-aided design of short-span steel bridges at <http://www.pdonline.org/courses/s115/s115.htm>.

## **Old Tires Get New Life on Iowa Bridges**

Iowa DOT is using a new material to fill bridge expansion joints: shaved tire particles. These tire "buffings," a byproduct of the tire retreading process, have replaced the foam blocks previously used to fill the four-inch gaps between the bridge deck and the roadway. Available inexpensively from tire retread businesses, the tire buffings stay in place even during heavy rains, which sometimes washed out the foam blocks. Read more in AASHTO's Success Stories section at <http://www.transportation.org/aashto/success.nsf/allpages/2004-02iowa>.

## **New Magazine for Surveyors Available Online**

Cheves Media has published its charter issue of *The American Surveyor*. Published eight times a year, the magazine features articles about the industry, surveyor profiles, a "Washington View" column about national legislation's effects on surveying, a "Test Yourself" section of questions similar to those in national surveying examinations, and more. The first issue is available online at <http://www.theamericansurveyor.com>.

## Construction and Materials Innovations

### Portland Cement Concrete Demo Trailer Coming To Wisconsin

The demonstration trailer for the Portland Cement Concrete Optimization pooled fund study will visit Wisconsin this summer. A member state in the study, Wisconsin will see the latest tests for predicting the performance of new concrete. See the new project summary at [http://www.pcccenter.iastate.edu/mco/pres\\_broch/MCOFeb04.pdf](http://www.pcccenter.iastate.edu/mco/pres_broch/MCOFeb04.pdf).

### Wisconsin A Leader In Asphalt Pavement Life

Just posted online, the Asphalt Alliance's *Pavement Type Selection Processes* details considerations relevant to designing pavements. Charts on page 8 show Wisconsin pavements last, on average, 18 years before first overlay – second best of the states cited. <http://www.asphaltalliance.com/upload/Pavement%20Type%20Selection%20Processes.pdf>.

### WisDOT To Host State Conference On Contracting

WisDOT announced a conference on illegal contracting practices. Contractors, consultants and other interested business persons will gather March 23 in Oconomowoc to hear WisDOT's perspective on how to avoid fraud, bid-rigging, and more. <http://www.dot.wisconsin.gov/news/events/ccc.htm>.

### New Prefabricated Bridge Element Report Reflects Wisconsin Interest

A newly posted NCHRP report on prefabricated bridge elements includes WisDOT survey responses. The study found general agreement that prefabricated bridge components outshine site-fabricated in quality but were more expensive – something that may change with standardization. UW-Madison professor Michael Oliva contributed to the research. [http://trb.org/publications/nchrp/nchrp\\_syn\\_324.pdf](http://trb.org/publications/nchrp/nchrp_syn_324.pdf).

### As FRP Approaches Conventionality, Wisconsin Leads Innovations

New NCHRP specifications for bolstering concrete structures with fiber-reinforced polymers drew from research by WHRP investigator Professor Larry Bank of UW-Madison. WHRP recently posted online research by Bank on mechanical fastening of FRP, a novel and quick process. See both [http://gulliver.trb.org/publications/nchrp/nchrp\\_rpt\\_514.pdf](http://gulliver.trb.org/publications/nchrp/nchrp_rpt_514.pdf) and <http://www.dot.wisconsin.gov/library/research/docs/finalreports/02-14brapidstrength-f.pdf>.

### Asphalt Treated Permeable Base Layer Fails Wet Test

In a just-released study, the Pavement Research Center at UC-Berkeley found an asphalt-treated permeable base layer ineffective in protecting pavement from fines intrusion on a wet base. The ATPB failed due to stripping, and the pavement showed surface rutting and cracking. See <http://www.its.berkeley.edu/pavementresearch/PDF/543%20Report.pdf>.

### Public Calls For Rubberized Overlays Spread

We've reported in past issues on developments in rubberized asphalt. Now its quieting properties have citizens in Colorado Springs shouting for more. Could this, despite problems with the material, be the start of widespread use? See <http://www.gazette.com/display.php?sid=803685>.

### Use Computer To Screen Culverts

In the just-posted *Research and Technology Transporter*, the FHWA describes its new Culvert Management System. With this software, agencies can inventory and assess their culverts, schedule maintenance and repair, and even evaluate culvert designs for cost-benefit analyses. <http://www.tfhrc.gov/trnspr/feb04/index.htm#structures>.

# Operating/Optimizing the System

## **Retroflective Borders on Traffic Signal Backplates Recommended for Use**

The Federal Highway Administration recently issued Interim Approval for the use of retroflective borders on traffic signal backplates – based on Canadian research showing 15 percent to 24 percent reductions in total crashes, especially rear-end type crashes, after addition of backplate borders. See approval memo and Canadian report at [http://mutcd.fhwa.dot.gov/res-interim\\_approvals.htm](http://mutcd.fhwa.dot.gov/res-interim_approvals.htm).

## **The Pothole Patching Playbook**

Just when you're happy to have survived another season of snow removal, potholes spring up everywhere to keep you on your toes. For a detailed look at why potholes occur, the latest patching technologies, and preventive planning assistance, link to the February 2004 *Better Roads*: <http://www.betterroads.com/articles/feb04e.htm>

## **Georgia House Votes to Ban Traffic Signal Changers**

Infrared transmitters, designed to help police and emergency workers change traffic signals, are now available on the Internet for about \$300. The Georgia House overwhelmingly approved a ban on their use by private citizens in an effort to fend off the anticipated chaos of traffic signal changing for travel convenience. Link to AccessNorthGa.com: [http://www.accessnorthga.com/news/ap\\_newfullstory.asp?ID=30923](http://www.accessnorthga.com/news/ap_newfullstory.asp?ID=30923)

## **Creative Lane Regulation Opens a Bottleneck**

A lane regulation scheme by police officers during rush hour in Dubai turned out to be an instant hit with motorists. Officers installed plastic cones to segregate a stretch of road, preventing traffic from the other lanes from flowing into the area. See the *Gulf News*: <http://www.gulf-news.com/Articles/news.asp?ArticleID=112095>

## **Ohio Repairs Pavement with Polymers**

According to the American Society of Highway Engineers, Ohio DOT has been using a fine-graded polymer asphalt overlay for maintenance. While not abandoning micro-surfacing and chip sealing, ODOT finds Smoothseal is relatively inexpensive, produces a smooth ride, and offers longevity. See <http://www.highwayengineers.org/scanner011904a.html>.

## **An Informed Traveler is a Happy Traveler**

The Colorado Department of Transportation has invested heavily in the deployment of Dynamic Message Signs on both state and federal highways. Colorado currently has over 150 of these permanent, electronic sign boards deployed at strategic locations around the state. Link to *Trip Quarterly* to find out what challenges Colorado faces in their use and what guidelines they follow for installation: [http://www.cotrip.org/cotrip\\_quarterly/feature2.htm](http://www.cotrip.org/cotrip_quarterly/feature2.htm).

## **Easier To Install And No Loops To Fail**

In Texas, inductive loop vehicle detectors are the standard for traffic signal control, but as they begin to fail or are damaged during resurfacing, TxDOT engineers are choosing to replace them with cameras. From the Texas Transportation Institute, Review of Featured Research: <http://tti.tamu.edu/researcher/newsletter.asp?vol=39&issue=4&article=6>.

## **Lessons Learned on Transit Signal Priority**

According to a test conducted in Broward County, Florida, implementing transit signal priority is a doable thing; it is just not always as easy as it sounds. The goal of such a program is to reduce the delay experienced by transit vehicles at traffic signals without significantly compromising signal coordination for the rest of the roadway users. See what FDOT learned in their *Sun Guide Disseminator*: <http://www.dot.state.fl.us/IntelligentTransportationSystems/ITS%20Deployment/Newsletter/issues/Febuary04.htm#ITSFL>. Courtesy of Transportation Communications Newsletter.

# Safe Travel/Smart Travel

## **New Mobile Work Zone Protection Device**

From a tragic incident comes an innovation designed to significantly improve safety for workers along the nation's highways. View the article on California's "shields of steel" in FHWA's *Focus* newsletter: <http://www.tfhr.gov/focus/jan04/01.htm>.

## **Targeting Highway Fatalities**

The U.S. Federal Highway Administration's Office of Safety has released a series of maps that provide state-by-state snapshots of highway, roadway departure, intersection, pedestrian and work zone fatality figures from 2002. The maps are designed as a tool to help states and localities strategically direct safety resources to areas of highest priority in terms of lives lost. Courtesy of the TRB E-Newsletter: <http://safety.fhwa.dot.gov/pubs/stats2002/index.htm>.

## **Australia's Tack on Road Safety Research**

The Australian Transport Safety Bureau is conducting road safety research in a number of areas that are also the targets of U.S. safety research – such as daytime running lights, speeding and enforcement, seatbelt reminder systems, driver fatigue, etc. Recent reports are available as full-text PDF files; older reports can be ordered. Link to reports under several categories at: <http://www.atsb.gov.au/road/research/index.cfm>.

## **Breaking Ground for 511 in Canada**

Harmonizing with U.S. efforts, ITS Canada has launched efforts to establish a 511 traveler information service, envisioning a future North America-wide corridor information service for highway and public transportation. View the report from ITS Canada: <http://www.itscanada.ca/english/project511.htm>.

## **A Full Plate: The Traffic Injury Research Foundation**

A joint U.S.-Canadian project, the Traffic Injury Research Foundation undertakes nearly two dozen research projects each year in support of its mission to reduce traffic related deaths and injuries. Link to descriptions of projects currently in progress or recently completed at: <http://www.trafficinjuryresearch.com/projects/projects.cfm>.

## **Field Testing Intelligent Speed Adaptation Technology**

Prosper – the Project for Research on Speed Adaptation Policies on European Roads – is exploring new speed management methods including Intelligent Speed Adaptation technology. Field testing includes an "active accelerator pedal," which exerts a counterforce at speeds over the speed limit. In order to exceed the speed limit the pedal must be pressed approximately three to five times harder than normal. Link to field test reports at: [http://www.rws-avv.nl/servlet/page?\\_pageid=121&\\_dad=portal30&\\_schema=PORTAL30&p\\_folder\\_id=7737,7738](http://www.rws-avv.nl/servlet/page?_pageid=121&_dad=portal30&_schema=PORTAL30&p_folder_id=7737,7738).

## **Update on Intelligent Vehicles and Intersections**

Here's a look at the latest automotive innovations and intersection technologies for improving driver performance. View details of developments such as frontal collision warning systems, adaptive cruise control, lane-departure and roadway-departure warning systems, and the trucker advisory system in the recent *Public Roads*: <http://www.tfhr.gov/pubrds/04jan/08.htm>.

## **Finding What the Driver Does**

The objective of a new research project at the University of Minnesota ITS Institute is to design a hardware and software system to classify different driver attention states based on behavioral activities rather than traditional visual metrics. View the report from the Institute: <http://www.its.umn.edu/research/projects/P2004010.html>.